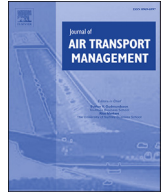




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Evaluating service quality of airline industry using hybrid best worst method and VIKOR

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ABSTRACT

Fierce competition and shrinking profits have impelled the airlines to stress upon improving the quality of the services being provided to the customers. Customers have become very specific about their service needs and often tend to shift to others that provide better services. Indian aviation industry is growing exponentially with customer base growing to 223.6 million in 2016 from 73.4 million in 2006. Service quality is an important research topic but the studies conducted so far have used basic SERVQUAL model and also there is limited studies in Indian airline context. So there is need to identify and then prioritize the service quality attributes for airline industry. Best worst method is used to rank and prioritize attributes of service quality that were identified through extensive literature review and VIKOR (ViseKriterijska Optimizacija I Komoromisno Resenje) methodology is used to rank the best airline with respect to these attributes. Tangibility, Reliability, security and safety and Ticket pricing are found to be most important attributes of service quality and further analysis using VIKOR methodology suggests that airline 2 is performing well on these attributes among the five airlines taken for study. The service quality attributes identified through extensive literature review and results obtained through MCDM analysis are fruitful for airline managers to address service quality issues. Further, scope of future research work and implications for airline industry managers have been discussed at the end to conclude the paper.

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1. Introduction

Due to rapid industrialization and economic growth, spending power of people has increased manifold in past few decades. Also the working class prefers to travel through airlines to save their time (Jou et al., 2008). Airlines are competing fiercely to attract customers as attracting more customers is crucial to their business and growth in this cut throat competition (Park et al., 2005; Hussain et al., 2015). To sustain in this competitive environment and to retain their customers, providing superior service is considered as top priority for the airlines (Mustafa et al., 2005; Chow, 2014). Customers are also becoming very specific about their needs and tend to switch to other airline industry if one industry fails to satisfy their needs. The airline industry has changed over the period of time drastically according to customer needs, like competitive ticket pricing and providing quick response to their problems.

Demand for air travel depends mainly on the economic conditions and status of a country (Wu and Cheng, 2013). India has one of

the rapidly growing aviation industry, the number of passengers have increased from 73.4 million in 2006 to 223.6 million in 2016. India is aiming to become third largest civil aviation market by the year 2020 and largest by year 2030. The growth is mainly attributed to frequent low cost carriers and huge amount of investment in aviation sector (AAI, 2016). To achieve the goal of becoming number one aviation industry by 2030, airlines have to work towards continuously attracting new customers and retaining old customers by providing services beyond the expectations of the customers, and there can be numerous other attributes of measuring service quality for Indian context apart from those suggested by SERVQUAL model. The main reason for this difference is that India lies in low income group country and service requirement of people is different and mainly focused on price apart from tangible services. There only a few studies conducted to evaluate the service quality parameters for airlines in Indian context. This study has three fold contribution for readers and managers, it helps in identifying new attributes of service quality for airline industry, traditionally only SERVQUAL model has been used in most of the studies. Second, this study is one of the few studies conducted in Indian context (Prakash and Barua, 2016b; Raut et al., 2016), and will help airline managers to improve their service quality based on the preference

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of the users and experts as to what attributes are more important in Indian context for improving service quality. Third, this study uses a novel methodology comprising of best worst method and VIKOR method, these methodologies are proven to give more consistent results and also helps save time of decision makers. In this context study has following research goals:

- To identify and evaluate the attributes of service quality for airlines in the context of Indian airline industry.
- To select the best airline among all the alternatives based on the service quality parameters identified in the research.

To fulfil the research goals, firstly extensive review of literature and expert opinion is taken to finalize the attributes of service quality, than a novel hybrid approach consisting of best worst method and VIKOR method is used to first evaluate weights of these attributes and then rank the various alternatives (airlines) on the basis of these alternatives.

The rest of the paper is divided as follows: section two highlights the background of the research, section three discusses about the research methodology, section four presents results of the analysis, section five provides discussion of the results, section six concludes the results and last section highlights the research limitations.

To achieve excellence in business providing quality service to its customers is essential for airlines all over the world, however many a times the customer needs and perception for services might vary from country to country as is seen in the study of Aksoy et al. (2003). Almost all of the studies conducted for airline service quality are for foreign countries like US (Gursoy et al., 2005), China (Chow, 2014; Jiang and Zhang, 2016), Turkey (Basfirinci and Mitra, 2015) to name a few. Further, most of the studies have been carried out using the tradition SERVQUAL model and only a few studies have used attributes other than these. There is a need to develop a service quality model for airline selection considering all these attributes in a holistic manner. Also, very few studies have been carried out for airline selection based on service quality using MCDM techniques (Tsaour et al., 2002; Ardakani et al., 2015) and only few such studies have been carried out in Indian context (Prakash and Barua, 2016b; Raut et al., 2016), although these studies have been carried out on similar ground using MCDM techniques but the service quality parameters used in these studies are not explored to full extent, like Prakash and Barua (2016b) used only 17 sub attributes of service quality and Raut et al. (2016) used 28 sub attributes categorized in 6 main attributes. However this study attempts to further explore the service quality attributes in Indian context.

2. Review of literature

The success of any service industry depends upon the quality of service being provided. "Service is a social act that takes place between the customer and representatives of the service company" (Norman, 1984). Service quality is actually an amalgamation of various different attributes (Tsaour et al., 2002). The service quality is often influenced by customer expectations, if an organization can provide services as per what customer desires, then it will be considered satisfactory and if the organization is able to provide services more than what customer desires than it greatly exceeds their expectations (Parasuraman et al., 1985). The traditional model for measuring service quality is given by Parasuraman et al. (1985) and it contains five main attributes namely "tangibility", "reliability", "responsiveness", "assurance" and "empathy". This model is widely known as SERVQUAL and has 22 sub dimensions under 5 main categories (Park et al., 2005). Although the SERVQUAL model

is widely used in service industry, but few other models have also come up over the time like, SERVPERF model based on the performance given by Cronin and Taylor (1992) and SERVPEX model that can measure disconfirmation in a single model (Cunningham et al., 2004).

In airline industry service is of prime importance and the business of various carriers depends on the quality of services being provided. For the case of airline industry SERVQUAL model has been widely used. Few studies have been carried out to address the issue of service quality in airline industry, Aksoy et al. (2003) conducted a comparative study between Turkish airline and airlines of four different countries. They found significant difference in service quality perception of flyers from different countries. Chen and Chang (2005) conducted a study to see the difference between service quality expectations at ground level and inflight services. The results indicate that there is indeed gap in these expectations and tangible services are more important for customers' inflight than at ground. They used eight dimensions of service quality. Liou and Tzeng (2007) identified 12 attributes of service quality for airlines and grouped them under six main categories. Grey relation analysis is used to rank airlines on the basis of these criteria. Ardakani et al. (2015) carried out a study to first identify the attributes of service quality for airlines and rank airlines based on these attributes. Safety, following schedule and variety of airplanes availability are found to be most important service quality criteria in this study. The various other important studies conducted for airline service quality are summarized in Table 1.

Based on the gaps identified, extensive review of literature was done and attributes of service quality for airline industry are categorized into seven main criteria and twenty nine sub criteria, a novel hybrid multi criteria decision making technique combining best worst method (to rank the criteria and find out weights) and VIKOR (to rank the airlines on the basis of these criteria) is used in this study. The attributes of airline service quality identified through literature review are presented in Table 2.

3. Research methodology

A three phase methodology has been employed in this study as shown in Fig. 1. The goal of using this three phase methodology is to first obtain optimized weights of service quality attributes and then finding out the optimized (best) airline among the airlines taken up for study. First phase involves identification of attributes of service quality on the basis of literature review and expert opinion. Second phase comprises of prioritizing and calculation of weights of these attributes using best worst methods and third phase consists of ranking the best alternative among all using VIKOR method. Although there are many other MCDM techniques being used for calculation of weights of criteria (attributes) like AHP, ANP, TOPSIS (Awasthi and Kannan, 2016; Gupta and Barua, 2016a; Prakash and Barua, 2016a) but best worst method is used in this study due to its ability to give more consistent results as compared to AHP and with lesser number of pairwise comparisons (Rezaei, 2015). Rezaei (2015) compared the results of best worst method with AHP and found the results of best worst method as more consistent than AHP, also the author showed that best worst method needs lesser data than AHP due to lesser number of pairwise comparisons, here only comparison is done between best and other attributes as well as between other attributes and worst attribute. Similarly VIKOR is used for ranking of alternative (airline) due to its ability to accurately optimize the multiple responses using compromise priority approach (Wu and Liu, 2011; Garg, 2016). Apart from these strengths these MCDM techniques suffers from certain limitations also, both best worst method and VIKOR method depends upon judgement of the experts only and it is necessary to choose experts

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